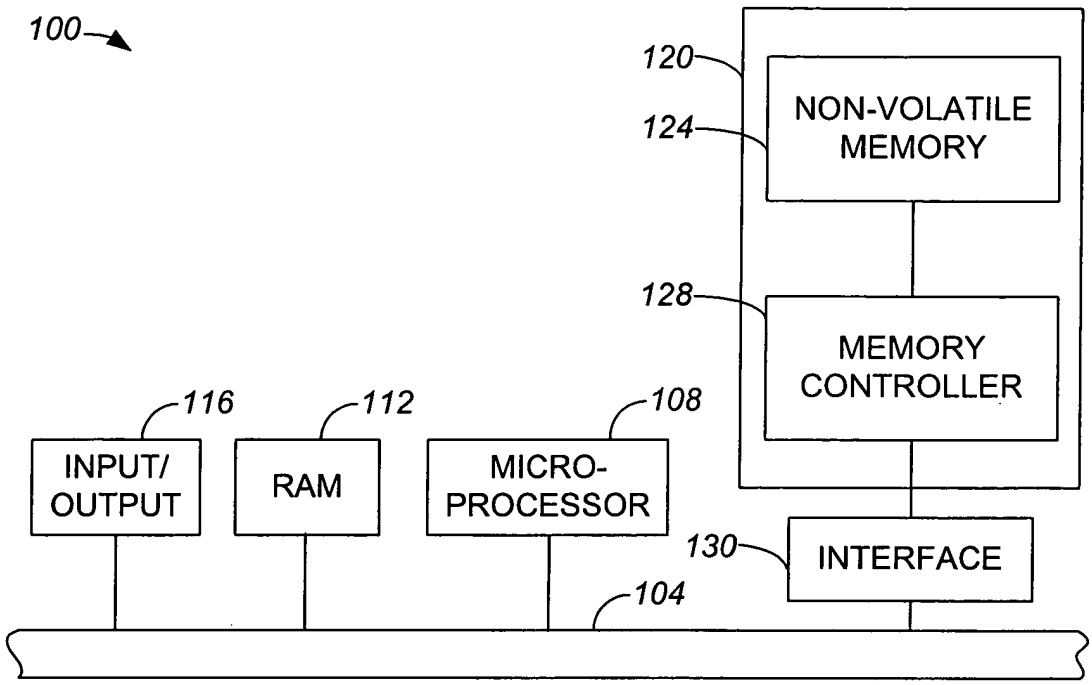
100
120
NON-VOLATILE MEMORY
124
128
MEMORY CONTROLLER
116
112
108
INPUT/ OUTPUT
RAM
MICRO-PROCESSOR
130
INTERFACE
104

Fig. 1a

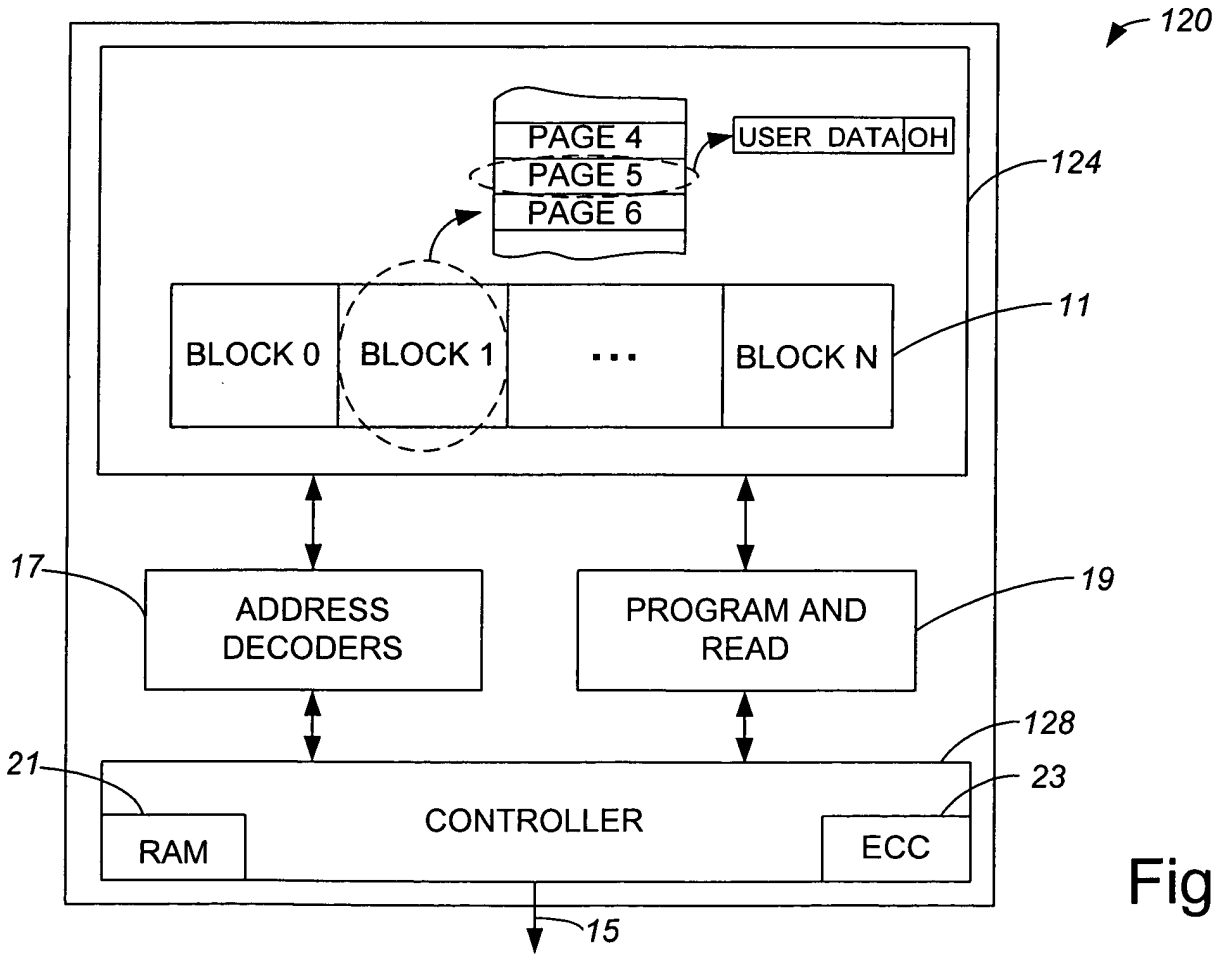
120
PAGE 4
PAGE 5
PAGE 6
USER DATA
OH
124
BLOCK 0
BLOCK 1
...
BLOCK N
11
17
ADDRESS DECODERS
PROGRAM AND READ
19
128
21
23
RAM
CONTROLLER
ECC
15

Fig. 1b

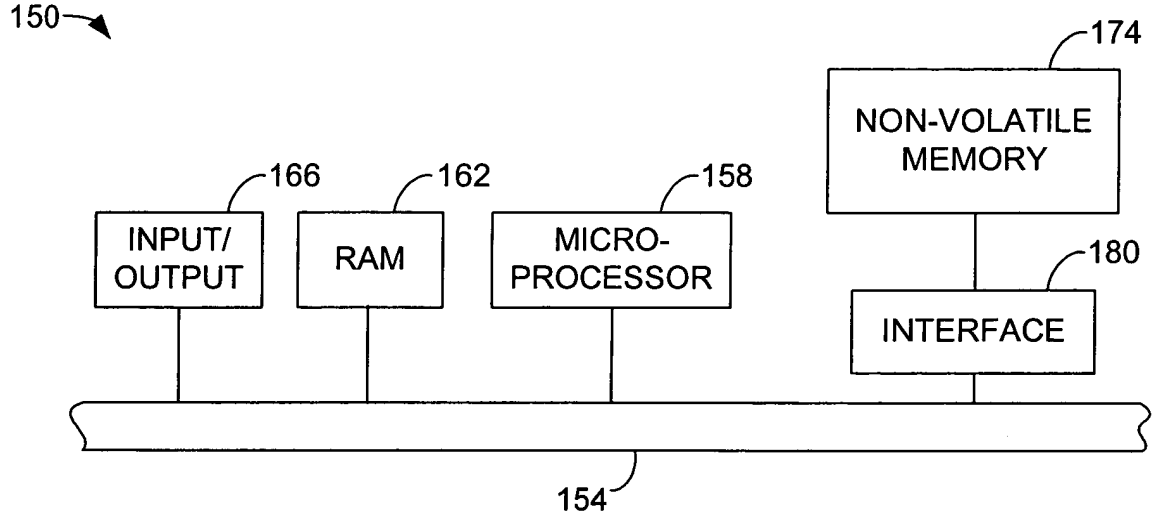
150
174
NON-VOLATILE MEMORY
166
162
158
INPUT/ OUTPUT
RAM
MICRO-PROCESSOR
180
INTERFACE
154

Fig. 1c

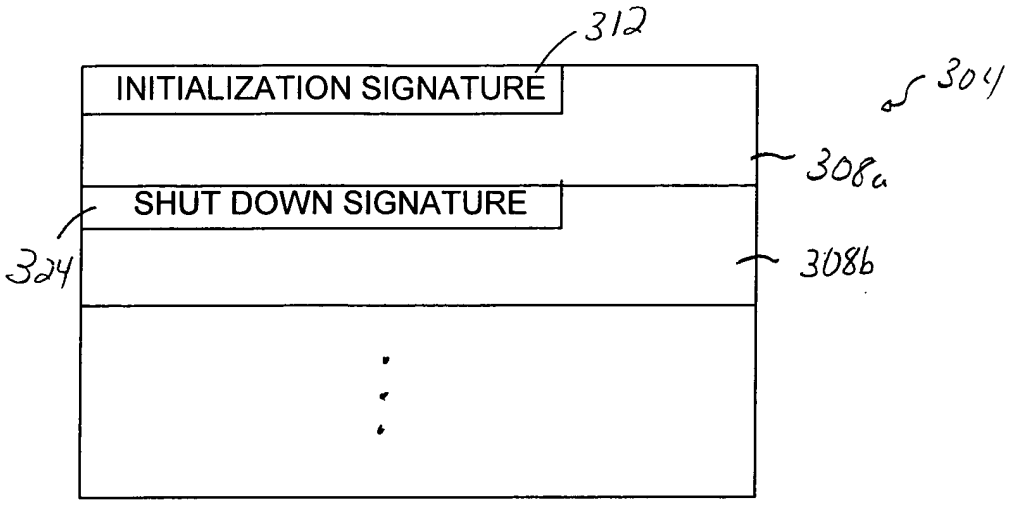
312
INITIALIZATION SIGNATURE
304
308a
SHUT DOWN SIGNATURE
324
308b

Fig. 3b

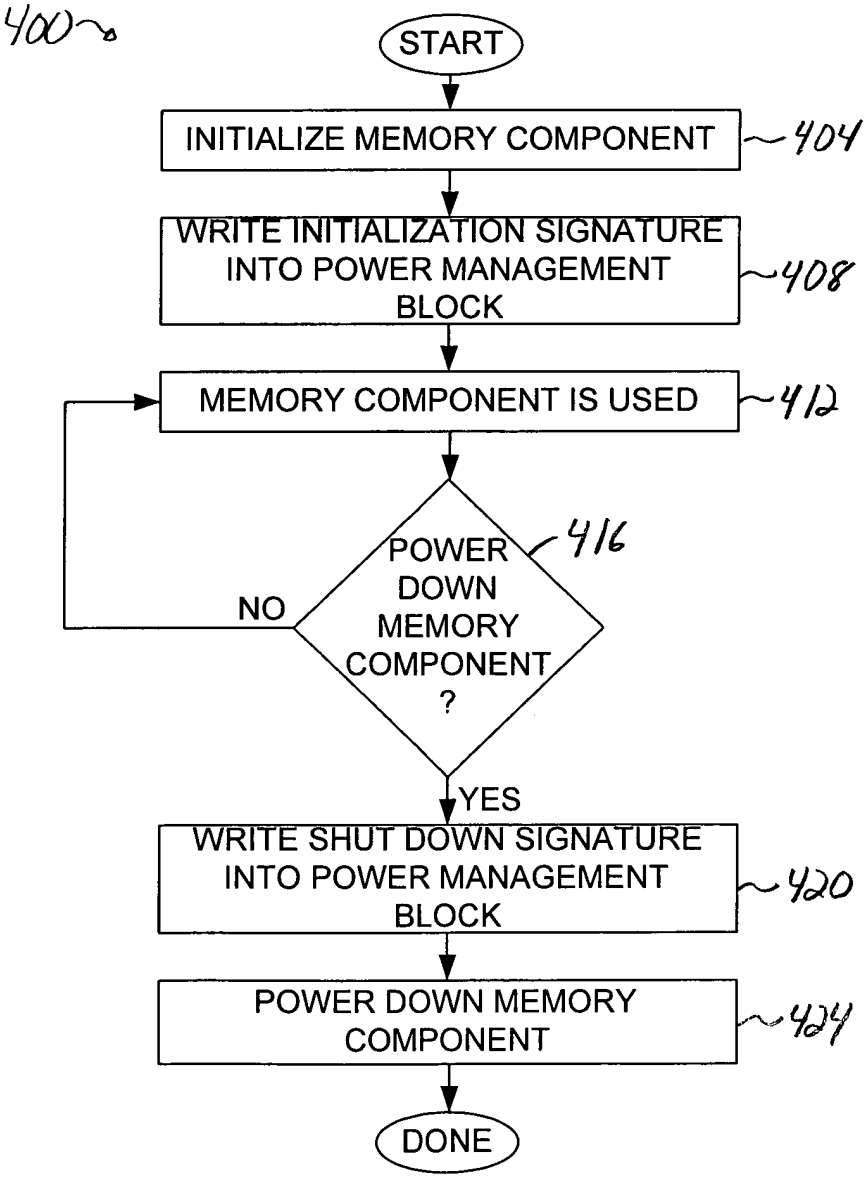
400
START
INITIALIZE MEMORY COMPONENT
404
WRITE INITIALIZATION SIGNATURE INTO POWER MANAGEMENT BLOCK
408
MEMORY COMPONENT IS USED
412
POWER DOWN MEMORY COMPONENT ?
416
NO
YES
WRITE SHUT DOWN SIGNATURE INTO POWER MANAGEMENT BLOCK
420
POWER DOWN MEMORY COMPONENT
424
DONE

Fig. 4

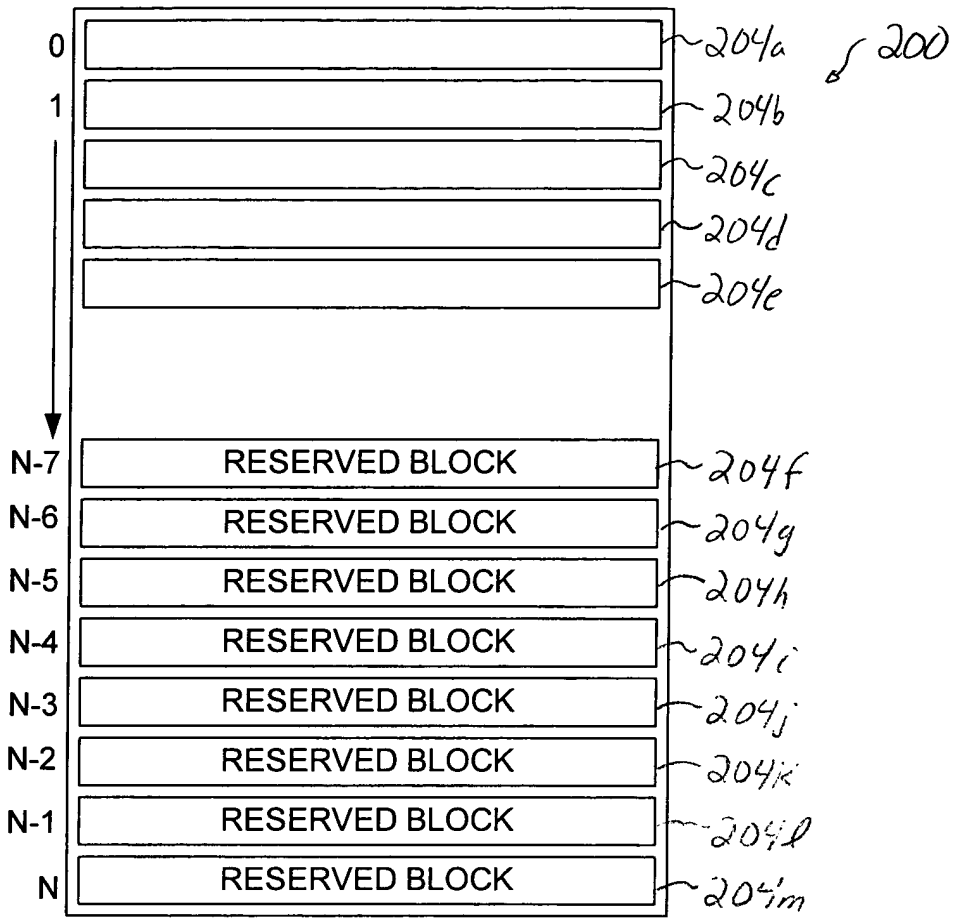
0
1
N-7
N-6
N-5
N-4
N-3
N-2
N-1
N
RESERVED BLOCK
RESERVED BLOCK
RESERVED BLOCK
RESERVED BLOCK
RESERVED BLOCK
RESERVED BLOCK
RESERVED BLOCK
RESERVED BLOCK
204a
204b
204c
204d
204e
204f
204g
204h
204i
204j
204k
204l
204m
200

Fig. 2

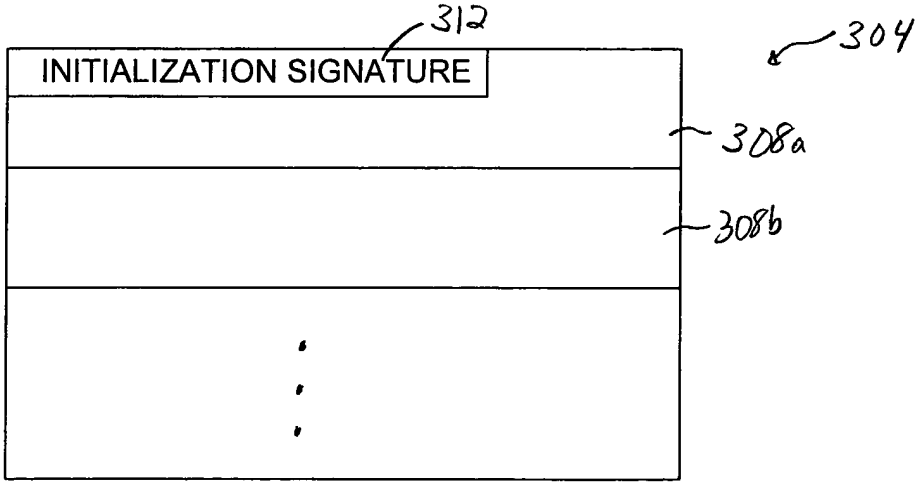
312
INITIALIZATION SIGNATURE
304
308a
308b

Fig. 3a

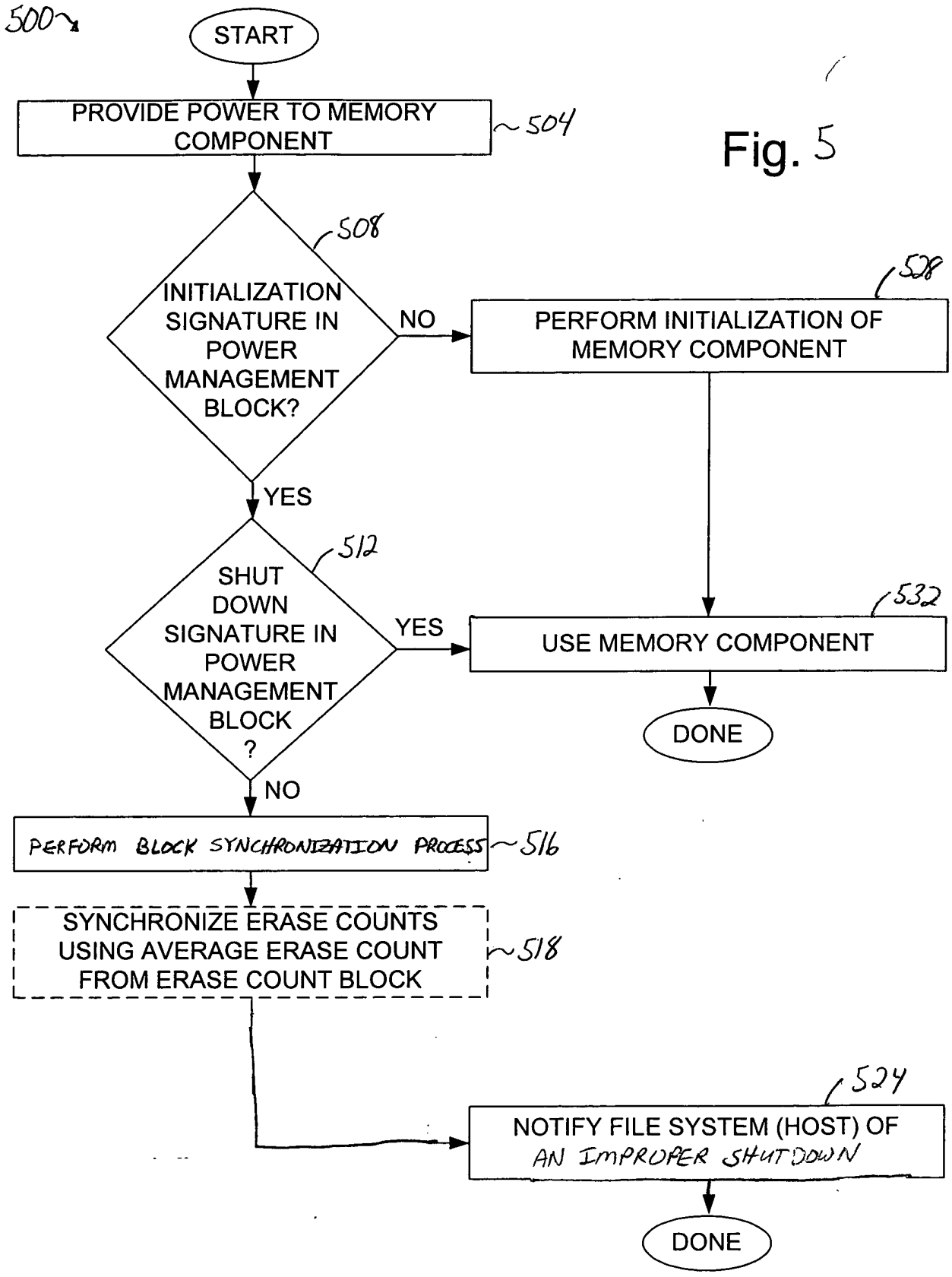
500
START
PROVIDE POWER TO MEMORY COMPONENT
504
INITIALIZATION SIGNATURE IN POWER MANAGEMENT BLOCK?
508
NO
PERFORM INITIALIZATION OF MEMORY COMPONENT
528
YES
SHUT DOWN SIGNATURE IN POWER MANAGEMENT BLOCK ?
512
YES
USE MEMORY COMPONENT
532
DONE
NO
PERFORM BLOCK SYNCHRONIZATION PROCESS
516
SYNCHRONIZE ERASE COUNTS USING AVERAGE ERASE COUNT FROM ERASE COUNT BLOCK
518
NOTIFY FILE SYSTEM (HOST) OF AN IMPROPER SHUTDOWN
524
DONE

Fig. 5

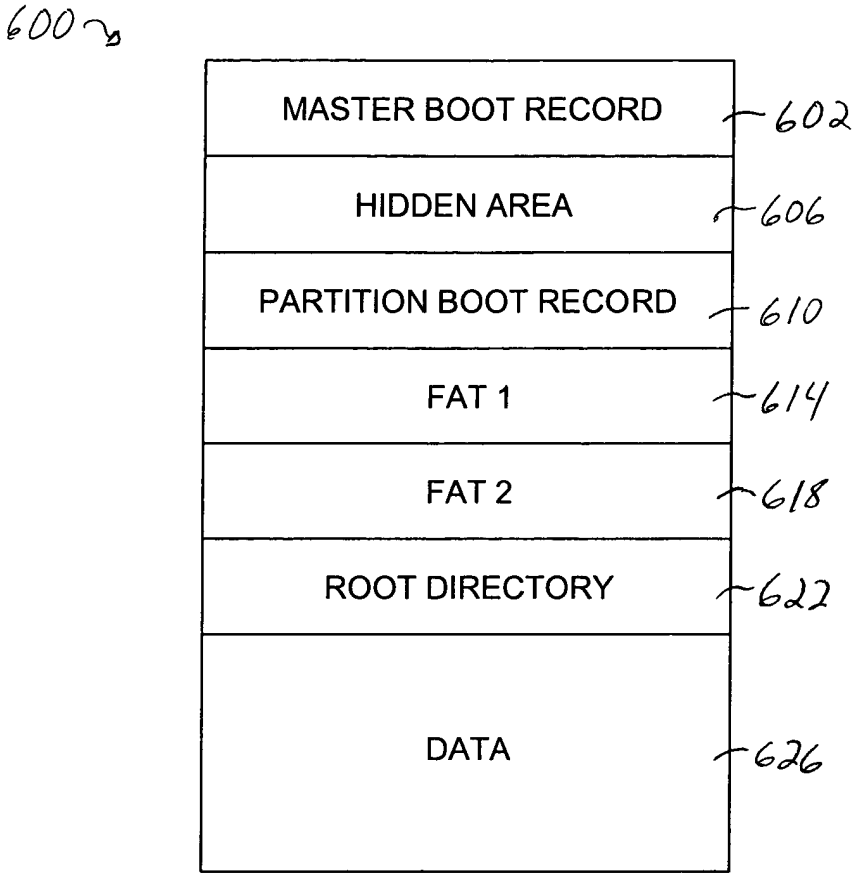
600
MASTER BOOT RECORD
602
HIDDEN AREA
606
PARTITION BOOT RECORD
610
FAT 1
614
FAT 2
618
ROOT DIRECTORY
622
DATA
626

Fig. 6

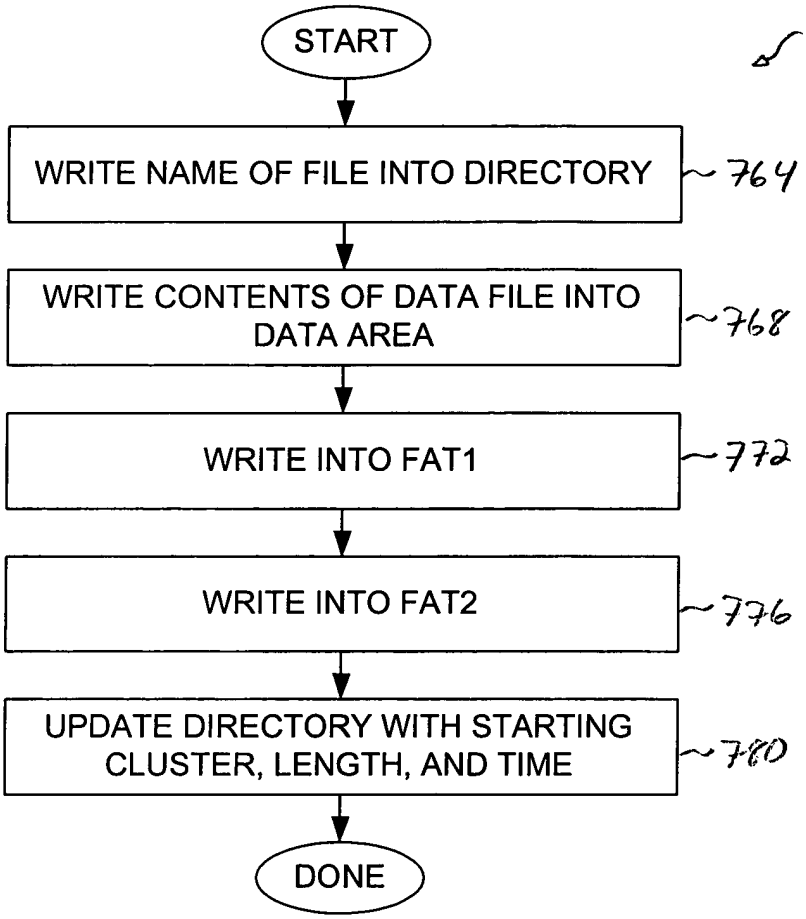
START
760
WRITE NAME OF FILE INTO DIRECTORY
764
WRITE CONTENTS OF DATA FILE INTO DATA AREA
768
WRITE INTO FAT1
772
WRITE INTO FAT2
776
UPDATE DIRECTORY WITH STARTING CLUSTER, LENGTH, AND TIME
780
DONE

Fig. 7

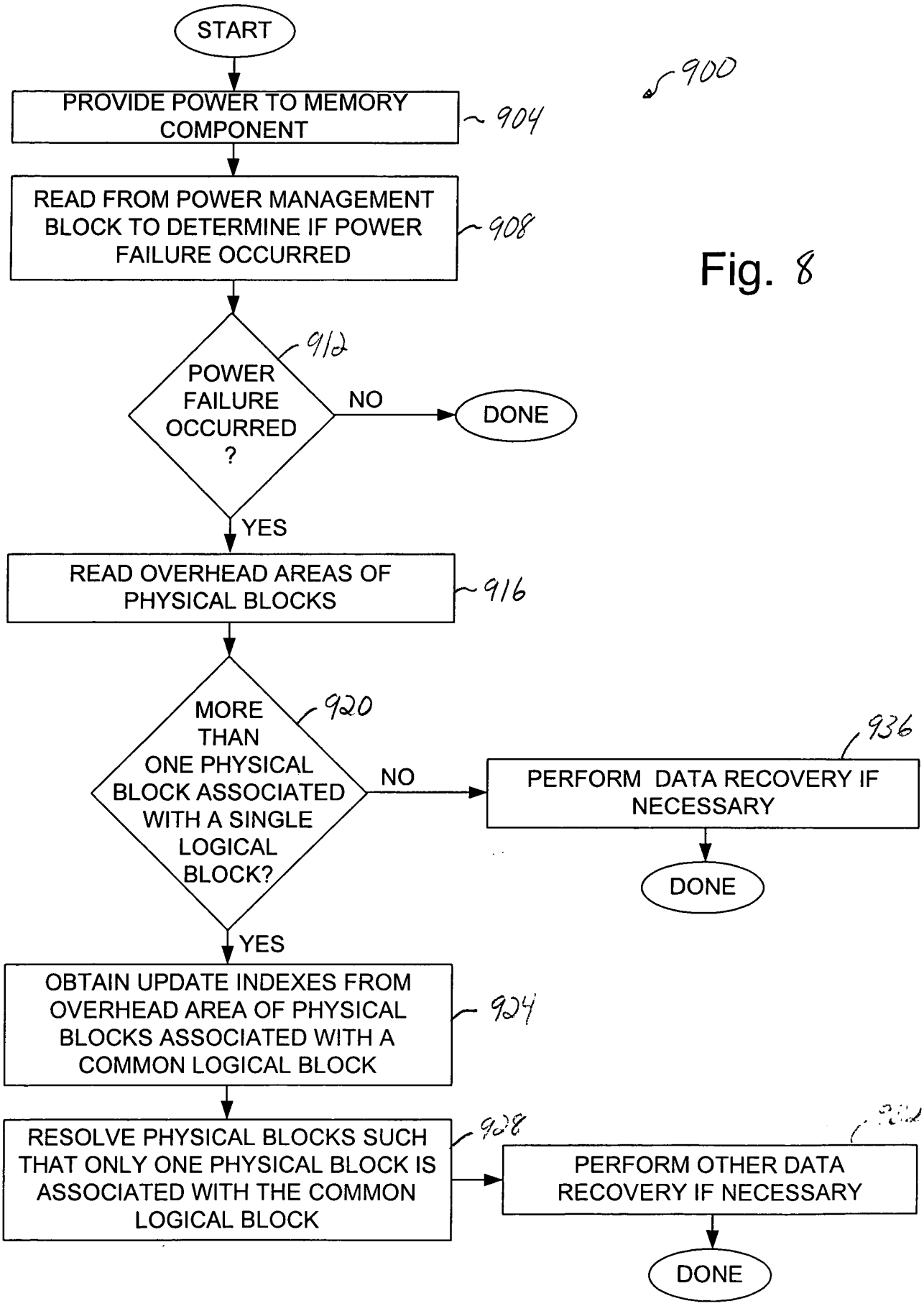
900
START
PROVIDE POWER TO MEMORY COMPONENT
904
READ FROM POWER MANAGEMENT BLOCK TO DETERMINE IF POWER FAILURE OCCURRED
908
POWER FAILURE OCCURRED ?
912
NO
DONE
YES
READ OVERHEAD AREAS OF PHYSICAL BLOCKS
916
MORE THAN ONE PHYSICAL BLOCK ASSOCIATED WITH A SINGLE LOGICAL BLOCK?
920
NO
936
PERFORM DATA RECOVERY IF NECESSARY
DONE
YES
OBTAIN UPDATE INDEXES FROM OVERHEAD AREA OF PHYSICAL BLOCKS ASSOCIATED WITH A COMMON LOGICAL BLOCK
924
RESOLVE PHYSICAL BLOCKS SUCH THAT ONLY ONE PHYSICAL BLOCK IS ASSOCIATED WITH THE COMMON LOGICAL BLOCK
928
PERFORM OTHER DATA RECOVERY IF NECESSARY
DONE

Fig. 8

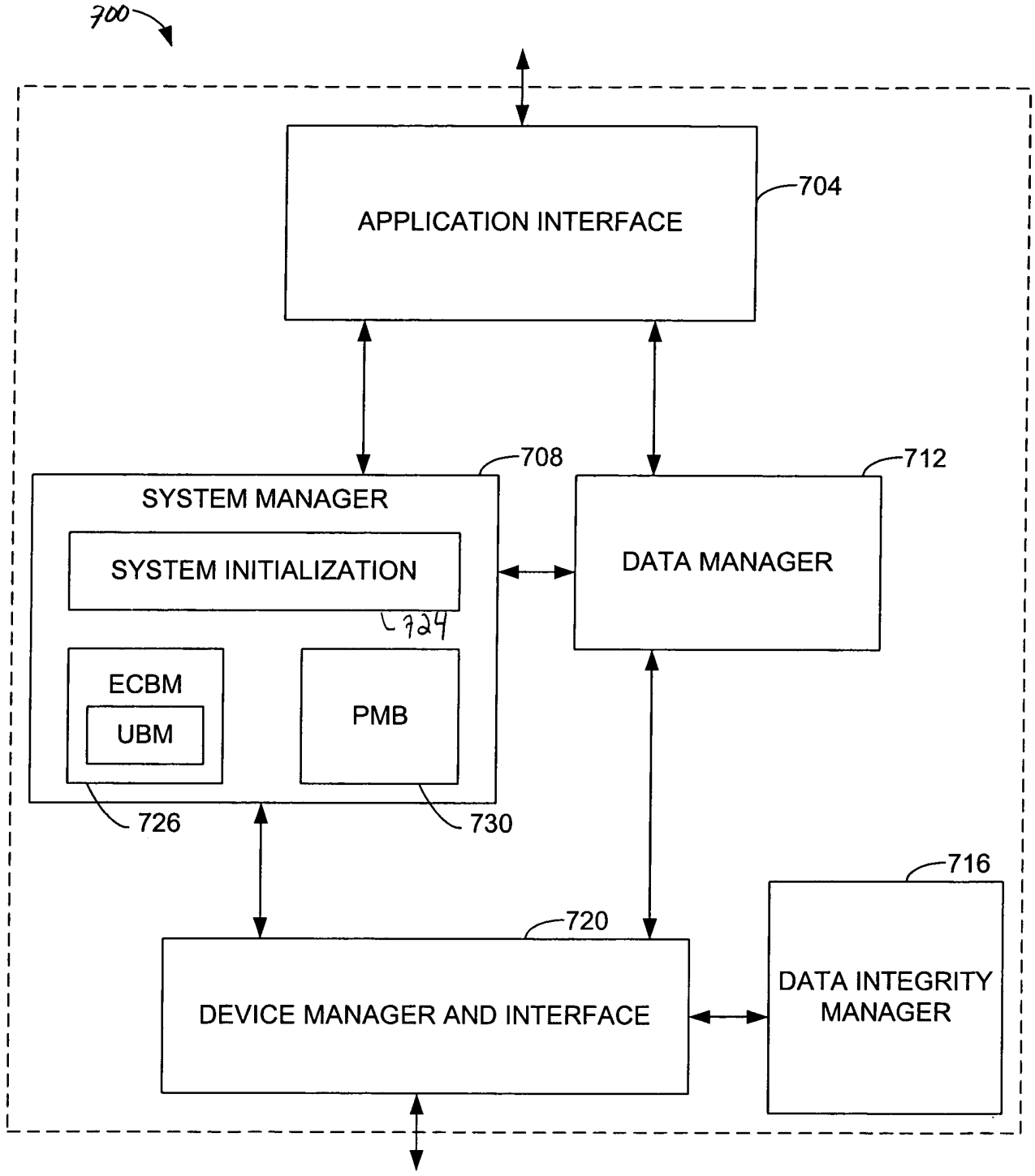
700
APPLICATION INTERFACE
704
SYSTEM MANAGER
708
SYSTEM INITIALIZATION
724
ECBM
UBM
PMB
726
730
DATA MANAGER
712
716
720
DEVICE MANAGER AND INTERFACE
DATA INTEGRITY MANAGER

Fig. 9